

## WHAT IS CLAIMED IS:

## 1. A servomechanism comprising:

an actuator configured to convert electrical energy into mechanical energy;

a controller configured for electrical connection to a power source;

a power cable electrically connecting said actuator and said controller, said power cable configured to transmit electrical current from said controller to said actuator; and

at least one transducer coupled to said actuator, said transducer electrically connected to said power cable and configured to transmit data over said power cable.

2. A servomechanism in accordance with Claim 1 wherein said actuator comprises an electric motor.

3. A servomechanism in accordance with Claim 1 wherein said actuator comprises a resistance configured to convert electrical energy into heat.

4. A servomechanism in accordance with Claim 1 further comprising an amplifier configured for electrical connection to a power source, said controller electrically connected to said amplifier, said power cable electrically connecting said actuator and said amplifier, and configured to transmit electrical current from said amplifier to said actuator.

## 5. A servomechanism in accordance with Claim 1 further comprising:

a data modulator electrically connected to said at least one transducer and said power cable;

a data recoverer electrically connected to said controller and said power cable;

said data modulator configured to transmit data from said at least one transducer over said power cable; and

said data recoverer configured to reconstitute data transmitted from said data modulator into a proper form for transmission to said controller.

6. A servomechanism in accordance with Claim 5 wherein said data recoverer configured to transmit data directly to said controller.

7 A servomechanism in accordance with Claim 5 wherein said data modulator coupled to an external surface of said actuator.

8. A servomechanism in accordance with Claim 5 wherein said data modulator positioned within an external surface of said actuator.

9. A servomechanism in accordance with Claim 4 further comprising:

a data modulator electrically connected to said at least one transducer and said power cable;

a data recoverer electrically connected to said amplifier and said power cable, said data recoverer positioned within an external surface of said amplifier;

said data modulator configured to transmit data from said at least one transducer over said power cable; and

said data recoverer configured to reconstitute data transmitted from said data modulator into a proper form for transmission to said controller.

10. A servomechanism in accordance with Claim 5 wherein said data recoverer coupled to an external surface of said actuator.

11. A servomechanism in accordance with Claim 1 wherein said at least one transducer positioned within an external surface of said actuator.

12. A servomechanism in accordance with Claim 1 wherein the data comprises analog data.

13. A servomechanism in accordance with Claim 1 wherein the data comprises digital data.

14. A servo motor assembly comprising:

a motor;

at least one transducer coupled to said motor;

a power cable configured for electrical connection to a power source and electrically connected to said motor and said at least one transducer; and

said transducer configured to transmit data over said power cable.

15. A servo motor in accordance with Claim 14 further comprising:

a data modulator electrically connected to said at least one transducer and said power cable; and

said data modulator configured to transmit data from said at least one transducer over said power cable.

16. A servo motor in accordance with Claim 15 wherein said data modulator coupled to an external surface of said motor.

17. A servo motor in accordance with Claim 15 wherein said data modulator positioned within an external surface of said motor.

18. A servo motor in accordance with Claim 14 wherein said at least one transducer positioned within an external surface of said motor.

19. A method for controlling a servomechanism including an actuator configured to convert electrical energy into mechanical energy, a controller, a power cable electrically connected to the controller and the actuator, the power cable configured to transmit electrical current from the controller to the actuator, and at least one transducer coupled to the actuator, said method comprising the steps of:

electrically connecting the at least one transducer to the power cable; and

transmitting data from the at least one transducer over the power cable.

20. A method in accordance with Claim 19 wherein the servomechanism further includes a data modulator electrically connected to the transducer and the power cable and a data recoverer electrically connected to the power cable and the controller, said step of electrically connecting the at least one transducer further comprising the steps of:

configuring the data modulator to transmit data from the at least one transducer over the power cable; and

configuring the data recoverer to reconstitute data transmitted over the power cable by the data modulator into a proper form for transmission to the controller.

21. A method in accordance with Claim 19 wherein the servomechanism further includes an amplifier, a data modulator electrically connected to the transducer and the power cable, and a data recoverer electrically connected to the power cable and the amplifier, the power cable electrically connected to the amplifier and the actuator, the controller electrically connected to the amplifier, said step of electrically connecting the at least one transducer further comprising the steps of:

configuring the data modulator to transmit data from the at least one transducer over the power cable; and

configuring the data recoverer to reconstitute data transmitted over the power cable by the data modulator into a proper form for transmission to the controller.

22. A method for installing an actuator configured to convert electrical energy into mechanical energy into a servomechanism including a controller, a power cable electrically connected to the controller, and at least one transducer configured to receive data from the actuator, said method comprising the steps of:

electrically connecting the power cable to the actuator such that the power cable configured to transmit electrical current from the controller to the actuator;

electrically connecting the at least one transducer to the power cable; and

configuring the transducer to transmit data over the power cable.

23. A method in accordance with Claim 22 wherein the servomechanism further includes a data modulator and a data recoverer, said step of electrically connecting the at least one transducer further comprising the steps of:

electrically connecting the data modulator to the at least one transducer and the power cable;

configuring the data modulator to transmit data from the at least one transducer over the power cable;

electrically connecting the data recoverer to the power cable and the controller; and

configuring the data recoverer to reconstitute data transmitted over the power cable by the data modulator into a proper form for transmission to the controller.

24. A method in accordance with Claim 22 wherein the servomechanism further includes an amplifier, a data modulator electrically connected to the transducer and the power cable, and a data recoverer electrically connected to the power cable and the amplifier, the power cable electrically connected to the amplifier and the actuator, the controller electrically connected to the amplifier, said step of electrically connecting the at least one transducer further comprising the steps of:

electrically connecting the data modulator to the at least one transducer and the power cable;

configuring the data modulator to transmit data from the at least one transducer over the power cable;

electrically connecting the data recoverer to the power cable and the amplifier; and

configuring the data recoverer to reconstitute data transmitted over the power cable by the data modulator into a proper form for transmission to the controller.